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Acuña, Andrés

Departamento de Economía y Finanzas, Universidad del Bío-Bío

January 2014

Margin of victory vs. opportunity-cost of time as voting motivators in the Biobio Region*

Andrés A. Acuña[a]

[a]Departamento de Economía y Finanzas, Universidad del Bío-Bío. Avenida Collao 1202, Casilla 5-C, Concepción, Chile. E-mail: aacunad@ubiobio.cl

Draft version: January 2014

Abstract

The apathy for electoral and political participation in Latin America shows an increasing trend that deserves the scholar community's attention. In this sense, this paper models the voter registration decision in a mandatory voting system that includes the margin of victory as a potential motivator of voter enrollment. The empirical test is focused on the Biobio region, Chile, during the period 2003-2011. The results indicate that voter enrollment is negatively influenced by the margin of victory only if the model is separately regressed for presidential and mayoral elections. Marginal effects from W2LT regressions are lower in mayoral than in presidential elections, which indicates that the electorate participates depending on what is the political office in question. The citizen participation and racial effects are larger for men than women, which could reorient the design of public policy aimed to encourage the civic involvement of male indigenous population. Finally, the discrepancy between the W2LT results from two distant periods suggests a structural change in the Biobio's electorate during the last decade.

Keywords — electoral participation, margin of victory, random effects Tobit model, voting behavior, Latin America, Chile

JEL classification — C24, D72, O10

*This research used data from the National socioeconomic characterization survey (CASEN). The author would like to thank to Ministry of Social Development, copyright owner of the survey, for allowing him to use the database. All results are the author's responsibility and they do not compromise the Ministry of Social Development.

1 Introduction

The voting behavior literature is based on the pioneer work of Anthony Downs in 1957 and Gordon Tullock in 1967 (cited by Barzel & Silberberg, 1973), but it was mainly developed in the 1970s. During this decade, the efforts were focused not only to giving theoretical support to electoral involvement from the economic rationality perspective (Frey, 1971; Barzel & Silberberg, 1973; Tollison & Willett, 1973; Ferejohn & Fiorina, 1974; May & Martin, 1975), but also to identify the relevance of social and economics variables over voter participation (Silberman & Durden, 1975; Tollison et al., 1975; Settle & Abrams, 1976).

Stigler (1972) introduced the concept of political competition in order to model the political parties' behavior regarding to the attraction of new voters. Therefore, the margin of victory became into a plausible explanation to parties and voters behavior.

Thenceforth, the vast evidence about the margin of victory effect, also known as Downsian closeness effect, has not been conclusive. The ecological fallacy critique stated by Matsusaka & Palda (1993) called into question the previous evidence obtained from aggregated data. Nevertheless, the presence of the ecological fallacy in macro-level estimates had already been highlighted by Lichtman (1974) and Kramer (1983). Both authors demonstrated that macro-level regressions exhibit more suitable properties than individual survey estimates, specially when the aggregated model is well-specified.

[Figure 1 about here.]

On the other hand, low turnout around the globe had been a continuous concern for politicians and academic community. In this sense, in the United States this situation had motivated several private and government efforts in order to increase the voter turnout, mainly in American youth. For instance, in 1993, during the Bill Clinton administration, was promulgated the National voter registration Act that aimed to facilitate the voter enrollment process. And Rock the vote, an American non-profit organization founded in the 1990s, had encouraged the youth electoral participation through a diverse range of cultural and musical activities. However, in the election of November 2010 just 21% of citizens ages 18 to 24 cast their ballot (Brandon, 2012).

The voter participation in Chile shows a disturbing downward trend in the last decade, specially in youth vote where the real income and citizen participation rate have played a remarkable role in this behavior (Toro, 2007; Corvalan & Cox, 2013; Acuña, 2013b). This situation has increased dramatically after the approval of the act that introduced automatic voter registration and voluntary voting. In fact, in the 2012 Mayor and Councils election the abstention rate rose the sixty percent, which may constitute an increasing threat to the legitimacy of Chilean democracy in the future.

Before the Chilean voting rule was modified, the Biobio region concentrated in 2011 the 13% of the electorate, which ranked second only to Metropolitana region with a similar pattern. Indeed, the voter enrollment rate in the Biobio region had fallen from 83.3% in 2000 to 70.8% in 2011. This pattern is more accentuated in the male electorate that has lost 14-percentage points over the same period (see figure 1).

Inside the Biobio region, the lowest enrollment rates in 2011 were reported in those municipalities linked to urban centers, such as Chiguayante (39.8%), Chillan Viejo (57%), San Pedro de la Paz (58%), and Los Angeles (59.4%). Figure 2 shows the change experienced by the voter registration rate between 2000 and 2011 in each municipality that made up this Chilean region.

[Figure 2 about here.]

Based on the above, the behavior of the Chilean electoral roll, particularly the Biobio region, constitutes an interesting case to explore from the economic rationality perspective. Hence, this paper propose an extension to the model stated by Acuña (2013a) where the voter enrollment decision is made in a society that treats democracy as a public good. In addition, this paper empirically tests the extended model in order to show new evidence regarding to two voting motivators: margin of victory and opportunity-cost of time.

2 Material and methods

2.1 The theoretical model

The following model constitutes an extension to that proposed by Acuña (2013a) in order to include the margin of victory as a potential motivator of voter enrollment.

Suppose that a democratic society with a binomial political system is populated by n citizens, whom have preferences for a consumption good, x_i, which price is given by p_x. The voting rule in this society consists in voluntary voter enrollment but mandatory voting.

The available time can be allocated as follows, each citizen (or individual) can allocate a fraction h_i to work in the labor market and earn a nominal wage, w, and a fraction l_i to enjoy leisure in the form of activities linked to citizen participation, whose are costless. Thus, the time constraint is: $l_i + h_i = 1$.

On the other hand, each individual values democratic institutions or democratic principles (i.e., democracy itself) that prevail in the society, which can be represented by the variable d. In addition, each citizen express (or feel) sympathy for a particular political party in a binomial political system: the right-wing party A or the left-wing party B. Thus, before each citizen makes a decision regarding to his/her voter enrollment status, he or she observes the previous electoral outcome in which party A (B) has a margin of victory over party B (A). Therefore, the utility function for citizen i, who is a party j's partisan, is given by:

$$u_i^j(x_i^j, l_i^j, d, m_{-1}) \tag{1}$$

Where $u(\cdot)$ is a continuous, increasing, and at least twice differentiable function in x, l, d, and m_{-1}; $j = A, B$; $i = 1, 2, \ldots, n_j$; and $n = n_A + n_B$.

Under this democratic context, each citizen must decide whether being or not part of civic life through voter enrollment, which decision is represented by the variable r_i. If the individual decides

to be enrolled in the voter register (i.e., $r_i = 1$), then he (or she) contributes to strengthening the democratic institutions. However, this decision implies a nominal cost c_r, which summarizes all the costs related to mandatory voting, such as transportation costs or a fine for not attending to voting.[1] Conversely, if the individual decides to not be enrolled, then $r_i = 0$. Thus, the budget constraint in real terms that faces every individual is given by:

$$x_i^j + \delta r_i^j \leq h_i^j \omega \tag{2}$$

Where $\delta = \frac{c_r}{p_x}$ is the real cost for being enrolled in the voter register and $\omega = \frac{w}{p_x}$ the real wage.

Regarding to citizen participation, the electoral roll, R, is composed by the sum of those parties A and B's partisans that decided to be enrolled on (i.e., for whom $r_i = 1$) plus those that decided in the previous period to be enrolled.

Moreover, democracy, d, is treated as a public good, which means each citizen contributes to it if he/she decides to be part of electoral roll and assume his/her civic duties. Hence, democracy is a function of the electoral register, that is, $d = f(R)$, where $f(\cdot)$ is a continuous, increasing, and at least twice differentiable function.

Therefore, each partisan i of party j must solve the following problem:

$$\begin{aligned}
&\max_{\{x,l,r\}} u_i^j(x_i^j, l_i^j, d, m_{-1}) \\
&\text{s.t.:} \quad x_i^j + \delta r_i^j \leq h_i^j \omega \\
&\qquad\quad l_i^j + h_i^j = 1 \\
&\qquad\quad R = (1-\mu)R_{-1} + \sum_{k=1}^{n_A} r_k^j + \sum_{l=1}^{n_B} r_l^j = (1-\mu)R_{-1} + R^A + R^B \\
&\qquad\quad d = f(R) \\
&\qquad\quad m_{-1} = \frac{R_{-1}^A}{R_{-1}^B}
\end{aligned} \tag{3}$$

Where $x_i^j \geq 0$, $l_i^j, h_i^j \in [0,1]$, $r_i^j = 0, 1$, $R \geq 0$, $d \geq 0$, and $m_{-1} > 0$. μ is the mortality rate of the electorate in each period.

The optimal values for x, l, h, and r can be obtained from the following equation:

$$\frac{\partial u_i^j}{\partial x_i^j} = \frac{1}{\omega}\frac{\partial u_i^j}{\partial l_i^j} = \frac{1}{\delta}\frac{\partial u_i^j}{\partial d} f'(R) \tag{4}$$

Where $\frac{\partial u_i^j}{\partial x_i^j}$, $\frac{\partial u_i^j}{\partial l_i^j}$, and $\frac{\partial u_i^j}{\partial d}$ are the marginal utility of consumption, leisure, and democracy, and $f'(R)$ the partial derivative of f with respect to R.

[1] Krasa & Polborn (2009) evaluate the effects of assymetric voting costs (and information about candidates) and subsidies over voter participation rate in a compulsory voting system.

From a social perspective, suppose that a policy maker is seeking to maximize the common good in this democratic society. Therefore, the problem that has to be solved looks as follows:

$$
\begin{aligned}
&\max_{\{x,l,r,d\}} \sum_{i=1}^{n_A} u_i^A(x_i^A, l_i^A, d, m_{-1}) + \sum_{i=1}^{n_B} u_i^B(x_i^B, l_i^B, d, m_{-1}) \\
&\text{s.t.:} \qquad \sum_{i=1}^{n_A} x_i^A + \sum_{i=1}^{n_B} x_i^B + \delta(R^A + R^B) \;\leq\; \omega\left(\sum_{i=1}^{n_A} h_i^A + \sum_{i=1}^{n_B} h_i^B\right) \\
&\qquad\qquad l_i^j + h_i^j \;=\; 1 \\
&\qquad\qquad R \;=\; (1-\mu)R_{-1} + R^A + R^B \\
&\qquad\qquad d \;=\; f(R)
\end{aligned} \tag{5}
$$

Where $x_i^j \geq 0$, $l_i^j, h_i^j \in [0,1]$, $r_i^j = 0, 1$, $R \geq 0$, $d \geq 0$.

The social solution implies the following condition:

$$
f'(R) = \left(\frac{\delta}{\omega}\right)\left[\sum_{j=A,B}\sum_{i=1}^{n} \frac{\partial u_i^j/\partial l_i^j}{\partial u_i^j/\partial d}\right] = \delta\left[\sum_{j=A,B}\sum_{i=1}^{n} \frac{\partial u_i^j/\partial x_i^j}{\partial u_i^j/\partial d}\right] \tag{6}
$$

The above condition yields the optimal values for $x_i^\star$, $l_i^\star$, $h_i^\star$ $r_i^\star$, $d^\star$ y $R^\star$, from which can be defined the following concepts. The voter registration rate, ν, is given by:

$$
\nu = \frac{1}{n}\sum_{i=1}^{n} r_i^\star \tag{7}
$$

The citizen participation rate, κ, is defined as follows:

$$
\kappa = \frac{1}{n}\sum_{i=1}^{n} l_i^\star \tag{8}
$$

Finally, the optimal voter enrollment decision, r_i^j, could be expressed by the following implicit function:

$$
r_i^j = r(\omega, \delta, l, m_{-1}) \tag{9}
$$

Thus, if the above expression is log-linearized and aggregated, then the following empirical model can be stated:

$$
\ln(\nu_i) = \beta_1 + \beta_2 \ln(\omega)_i + \beta_3 \ln(m_{-1}) + \beta_4 \ln(\kappa)_i + \beta_5 \ln(\delta)_i + \varepsilon_i \tag{10}
$$

2.2 The empirical model

The empirical study was focused on the Biobio region, Chile, considering its political-administrative division (i.e., 54 municipalities) and gender approach. The data set was collected from Electoral Service (SERVEL), National Institute of Statistics (INE), and National Socioeconomic Characterization survey (CASEN)[2]. From these data sources, a four-period panel was built for the years 2003, 2006, 2009, and 2011.

In order to compute the margin of victory, it was necessary to classify the votes from the elections that took place in Chile during the period 2000-2011. Thus, the right-wing votes were those collected by the political parties Renovacion Nacional (RN) and Union Democrata Independiente (UDI). Those collected by independent candidates that signed a political pact with these two parties were considered as rightist votes as well.

Analogously, the left-wing ballots were those collected by the political parties Democracia Cristiana (DC), Partido Socialista de Chile (PS), Partido por la Democracia (PPD), Partido Radical Socialdemócrata (PRSD), Partido Humanista (PH), and Partido Comunista de Chile (PC), and by independent candidates that were included in a leftist pact.

It should be noted that the suffrages obtained by an independent candidate or member of the Partido Regionalista de los Independientes (PRI) were not considered in the margin of victory's computation. Finally, null and blank votes were excluded from the analysis.

Since the dependent variable (i.e., voter registration rate) is truncated in the interval [0,1] or [0,100], then the empirical model was regressed using the corner solution approach[3] in the form of a two-limit random effects Tobit (2LRET) model that can be stated as follows:

$$\nu_{i,t} = \begin{cases} 0 & \text{If } r_j = 0 \quad \text{for all } j = 1, \ldots, n \\ votereg_{i,t} & \text{If } r_j \neq 0 \quad \text{for some } j \\ 1 & \text{If } r_j = 1 \quad \text{for all } j = 1, \ldots, n \end{cases} \tag{11}$$

Where ν_{it} is the voter registration rate in municipality i at time t, r_j the voter registration decision of a citizen j that belongs to a municipality populated by n individuals, and $votereg_{i,t}$ is given by:

$$votereg_{i,t} = \beta_1 + \beta_2 lnwage_{i,t} + \beta_3 margin_{i,t} + \beta_4 particip_{i,t} + \beta_5 ethnic_{i,t} + \beta_6 rural_i + c_i + \eta_{i,t} \tag{12}$$

Where *votereg* is the ratio between population enrolled in electoral register and adult population (i.e., people over 17 years).[4] The available information at SERVEL enables to build the male and

[2]The CASEN survey has been applied since 1985 by Ministry of Social Development, former Ministry of Planning and known as MIDEPLAN, in order to retrieve information about the following modules: residents, education, labor market, income, health, and housing. Moreover, it includes some emergent topics, such as wealth and ICT, disability, poverty programs, ethnicity, migration, autobiography, and citizen participation.

[3]See Papke & Wooldridge (1996) or Wooldridge (2002, Ch. 16) for further details.

[4]Endersby & Krieckhaus (2008) discuss the consequences of using population as denominator when electoral participation is computed.

female electorate for each municipality included in the sample.

lnwage the natural logarithm of the average real income in Chilean pesos of 2009, which was computed from the YAUTAJ variable collected in the CASEN survey.[5]

margin the margin of victory observed in the election immediately previous to the application of CASEN survey. Therefore, in the estimation process were considered the 2001 Deputies election, the 2004 and 2008 Mayor election, and the 2005 and 2009 Presidential election.

particip the citizen participation rate according to those activities listed in questions R18, T18A, and R9 that were included in the CASEN 2003, 2009, and 2011 surveys, respectively. Since this question was excluded from CASEN 2006 survey, then the gap was filled by its 2003-2009 average.[6]

ethnic the ethnicity ratio, where the ethnic groups recognized by the CASEN survey are aymara, rapa-nui, quechua, mapuche, atacameño, coya, kawaskar, yagan, and diaguita.

rural a dummy variable that takes value of one if a municipality is considered as rural based on the criteria defined by OECD (2011) and zero otherwise. Finally, c_i is the unobserved municipality heterogeneity and $\eta_{i,t}$ the idiosyncratic error.

In order to assess if the closeness effect depends on the type of election used in its calculation, then the model was separately estimated for presidential and mayoral elections. In these regressions the electoral roll was used as a weight for each municipality in order to isolate the electorate size effect. From now on, the estimates from the weighted two-limit Tobit model will be denoted as W2LT.

The empirical model estimated by W2LT is the same stated by equation (12). Nevertheless, the following regression was ran when the margin effect was computed from the Mayor election's outcome:

$$(13)\quad votereg_i = \gamma_1 + \gamma_2 lnwage_i + \gamma_3 margin_i + \gamma_4 particip_i + \gamma_5 ethnic_i + \gamma_6 rural_i + \gamma_7 indep_i + \epsilon_i$$

Where *votereg*, *lnwage*, *margin*, *particip*, *ethnic*, and *rural* are defined as above, *indep* a dummy variable which takes value of one if an independent candidate was elected as mayor in the election immediately previous to the application of CASEN survey and zero otherwise, and ϵ_i the estimation error.

[5] This CASEN's variable considers the autonomous income for individuals and households and excludes any form of subsidy from the government.

[6] See Ministerio de Planificacion (2003, 2006, 2009) and Ministerio de Desarrollo Social (2011).

3 Main findings and discussion

The results from the 2LFET and W2LT estimates are reported in tables 1, 2, and 3.

From table 1, it can be notice that the opportunity-cost of time, measured by *lnwage*, is a 1% significant determinant of voter enrollment in the Biobio region along with citizen participation rate (*particip*). However, the coefficient associated to this last variable is negative, which is contrary to similar estimates reported for Chilean youth vote (Toro, 2007; Corvalan & Cox, 2013; Acuña, 2013b).

[Table 1 about here.]

A remarkable result from table 1 is that linked to rurality. In fact, this variable explains more than 10-percentage points of the voter registration rate in the female electorate, and this effect is twofold for its male counterpart.

On the other hand, the closeness and ethnicity effects are not statistically significant in the three panels considered in the 2LFET estimation. Therefore, it seems that how tight or wide was the election outcome in the Biobio region do not motivate to its citizens to attend to the enrollment offices.

The estimated partial effect reported in brackets for real wage is negative and larger than that estimated by Acuña (2013b) for the young electorate. This result is coherent with the fact that more than 75% of the electorate in the Biobio region was older than 40-years in 2011. That is, older voters must face several responsibilities that demands more time in the labor market than in others activities.

Motivated by the above results, it is interesting to assess if the closeness effect is statistically significant when is made a distinction in the margin of victory's calculation. In this sense, table 2 shows the W2LT estimates considering the first-round and runoff outcomes from the Presidential elections of 2005 and 2009. Moreover, table 3 exhibits the results from the W2LT regression considering the outcomes from Mayor elections of 2004 and 2008.

[Table 2 about here.]

The results depicted in table 2 indicate that the main determinants of voter registration rate in the Biobio region are real wage, citizen participation rate, and ethnicity rate, all of them are individually significant at 5% level in the first-round and runoff estimates. From this table, it is also peculiar that the empirical model exhibits a better performance for the year 2006 than 2011, which could be enhanced through a panel data estimation if more election outcome episodes were available at SERVEL.

The estimated marginal effects in brackets show that the effect of real wage over voter enrollment is still negative and consistent with the "opportunity-cost of time" argument highlighted by Frey (1971). Also, its magnitude is almost the same in the first-round and runoff estimates, but not significant in the regressions ran for the year 2011.

The closeness effect is negative, as expected, but not significant for all the 2006 regressions, however, it is larger in the runoff than the first-round.

The citizen participation effect is now positive as reported by Chilean literature. This marginal effect is larger for men than women, where the former has experienced a large reduction in its voter enrollment rate.

The ethnicity (or racial) effect is significant at 5% level and negative as reported by the classical empirical literature, e.g., Silberman & Durden (1975). From the gender perspective, this partial effect is greater for the male electorate, which could reorient a public policy that aims to increase the civic involvement of indigenous population.

Table 3 shows the W2LT estimates for the voter registration rate in the years 2006 and 2009 after computing the margin of victory from mayoral election's outcomes. From this table, it can be stated that the variables that encourage the voter enrollment in the Biobio region are the real wage, margin of victory, citizen participation rate, and ethnicity ratio.

All the above variables are jointly significant at 1% level in the estimates for year 2006, but not for 2009 where citizen participation rate, ethnicity ratio, and rurality are the key variables that drive the citizen's interest for being part of the Biobio region's electorate. This discrepancy between the results from two distant periods could be indicative of a structural change in the electorate during 2004 and 2011, however, this thesis requires a more comprehensive dataset to be tested using the panel data approach.

[Table 3 about here.]

The estimated partial effects indicate that income effect is negative, significant at 5% level, and its magnitude is lower than the estimates from presidential elections. The closeness effect is negative and significant for the full electorate and its male counterpart.

The citizen participation effect is positive, significant at 10% level, and lower for each electorate in the 2009 regression, which corroborates that exists some kind of complementarity between electoral and citizen involvement activities.

The racial effect is still negative and significant, and its magnitude is lower than that reported from presidential elections.

The rurality effect is only significant for the whole and male electorates in the 2009 regression, and lower than the 2LFET estimates.

Finally, it seems the fact that an independent candidate wins a mayoral election has no effect over a larger voter enrollment rate in the Biobio region. Therefore, the left-right dichotomy in the Chilean political system has left no room to a third party alternative, at least in the short run.

4 Concluding remarks

The apathy for participate in activities linked to a democratic system shows an increasing trend in Latin America that deserves the scholar community's attention. In Chile, the voter enrollment rate exhibits a downturn after recovering its democratic tradition in 1989, which is disturbing in youth vote (i.e., people ages 18 to 29). The Biobio region, which in 2011 concentrated the 13% of the Chilean electorate, was no stranger to this reality. In this sense, this paper aimed to present new evidence regarding to the relevance of two voter enrollment motivators, margin of victory and opportunity cost of time, over the voter registration decision in the Biobio region during the last decade. Thus, the following conclusions can be stated from the empirical test.

Estimates suggest that the main determinants of voter enrollment in Biobio are real wage, citizen participation rate, and rurality if the margin of victory is computed from several political elections. However, if the model is separately regressed for presidential and mayoral elections, then the motivators of voter registration are real wage, citizen participation rate, ethnicity ratio, and margin of victory.

The W2LT results are consistent with classical voting behavior giving fully support to the opportunity-cost of time argument stated by Frey (1971) and the winning majority effect based on the Downsian theory.

The real wage and closeness effects from W2LT regressions are lower in mayoral than in presidential elections, which could be an indication that the electorate participates in different ways depending on what is the political office in question.

The citizen participation and racial effects are larger for men than women no matter what kind of election was used in the margin of victory's computation. A fact that could be used in the design of public policy that aims to encourage the civic involvement of male indigenous population in the future.

Finally, the discrepancy between the W2LT results from two distant periods suggests a structural change in the Biobio electorate during the last decade. Nevertheless, the empirical test for this hypothesis requires a more comprehensive dataset from SERVEL.

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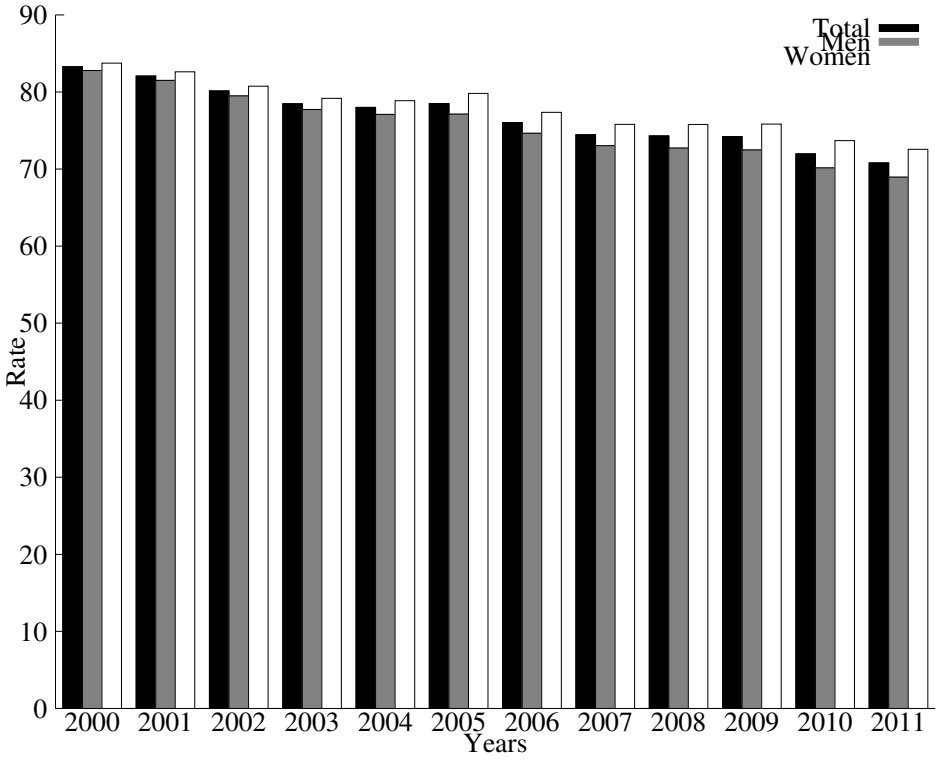
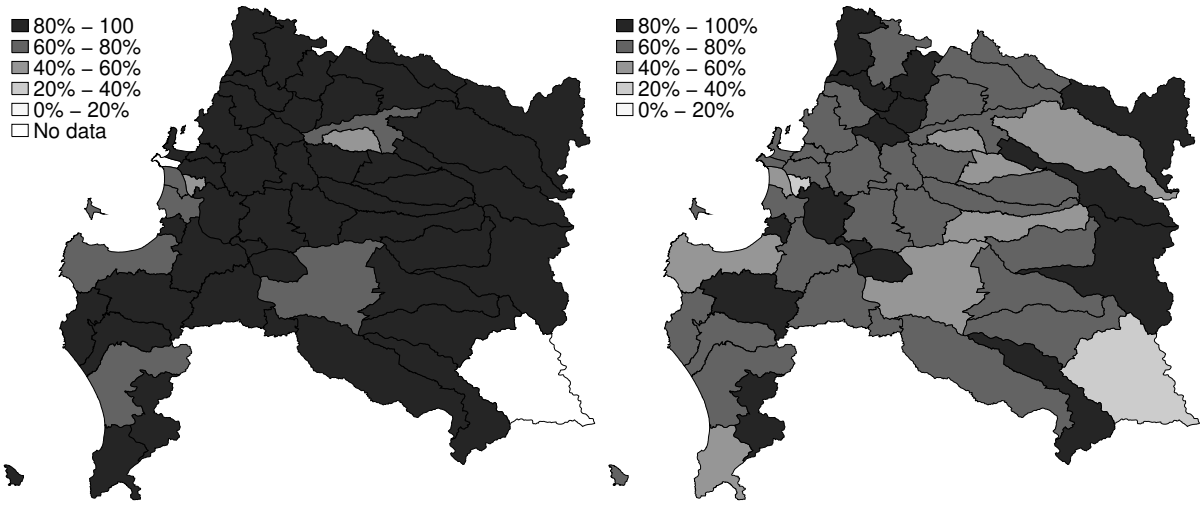
Figure 1: Annual voter enrollment rate for Biobio region, period 2000-2011.



Source: Electoral Service and National Institute of Statistics, Chile

Figure 2: Voter enrollment rate by municipality, Biobio region, years 2000 and 2011.



(a) 2000 (b) 2011

Source: Electoral Service and National Institute of Statistics, Chile

Table 1: 2LFET estimations with margin of victory computed from several elections

Variables	Full electorate	Male electorate	Female electorate
constant	3.4117***	1.1901**	3.3234***
lnwage	-0.2045***	-0.0390	-0.1942***
	[-0.1761***]	[-0.0341]	[-0.1695***]
margin	0.0286	-0.0001	0.0536
	[0.0246]	[-0.0001]	[0.0468]
particip	-0.3759***	0.0597	-0.6989***
	[-0.3236***]	[0.0523]	[-0.6100***]
ethnic	-0.3130	-0.3526	-0.2232
	[-0.2695]	[-0.3088]	[-0.1948]
rural	0.1321***	0.2069***	0.1295**
	[0.0987**]	[0.1450***]	[0.1002**]
No. of obs.	212	212	212
No. of groups	54	54	54
Left-censored obs.	0	0	0
Right-censored obs.	37	56	30
F statistic	19.14	5.73	34.52
Log likelihood	127.72	119.01	102.62

Note: Partial effects in brackets. * 10% significance, ** 5% significance, *** 1% significance.

Table 2: W2LT estimations with margin of victory computed from Presidential elections.

Variables	First round						Runoff					
	Full electorate		Male electorate		Female electorate		Full electorate		Male electorate		Female electorate	
	2006	2011	2006	2011	2006	2011	2006	2011	2006	2011	2006	2011
constant	3.6678***	1.0405	2.4657*	1.6491*	3.1251***	0.9307	3.4919***	1.0660	2.8061**	1.6478*	2.8760**	1.7911*
lnwage	-0.2444***	-0.0368	-0.1540	-0.0779	-0.2058**	-0.0287	-0.2323***	-0.0347	-0.1807*	-0.0784	-0.1872**	-0.0868
	[-0.2165***]	[-0.0363]	[-0.1279*]	[-0.0726]	[-0.1820**]	[-0.0283]	[-0.2055***]	[-0.0341]	[-0.1486**]	[-0.0731]	[-0.1658**]	[-0.0851]
margin	-0.1520	0.2488	-0.0466	-0.0609	-0.1490	0.4151***	-0.1950	-0.3359	-0.2660	0.0335	-0.1286	-0.4650**
	[-0.1347]	[0.2453]	[-0.0387]	[-0.0568]	[-0.1317]	[0.4102]	[-0.1725]	[-0.3302]	[-0.2188]	[0.0313]	[-0.1138]	[-0.4557**]
particip	0.6916**	0.1756	0.9412***	0.2100	0.6481**	0.0190	0.8026**	0.2662	1.0680***	0.1850	0.7072**	0.0101
	[0.6127**]	[0.1732]	[0.7815***]	[0.1956]	[0.5732**]	[0.0188]	[0.7099**]	[0.2617]	[0.8784***]	[0.1725]	[0.6263**]	[0.0099]
ethnic	-0.9864**	-0.2352	-1.0871**	-0.4775*	-0.7884	0.0434	-1.0035**	-0.3230	-1.1405**	-0.4658*	-0.7937	-0.0606
	[-0.8738**]	[-0.2319]	[-0.9026**]	[-0.4448*]	[-0.6972*]	[0.0429]	[-0.8876**]	[-0.3175]	[-0.9380**]	[-0.4344*]	[-0.7029*]	[-0.0594]
rural	0.0351	0.0211	0.0724	0.1593***	0.0298	-0.0394	0.0302	-0.0008	0.0508	0.1626***	0.0328	-0.0778
	[0.0299]	[0.0207]	[0.0549]	[0.1301***]	[0.0256]	[-0.0392]	[0.0259]	[-0.0007]	[0.0392]	[0.1326]	[0.0281]	[-0.0771]
No. of obs.	52	54	52	54	52	54	52	54	52	54	52	54
Left-censored obs.	0	0	0	0	0	0	0	0	0	0	0	0
Right-censored obs.	13	2	17	14	11	1	13	2	17	14	11	1
χ^2 statistic	34.28	1.20	33.11	23.81	25.90	8.20	35.07	8.05	35.12	23.74	25.84	5.61
Log likelihood	15.84	27.10	5.79	7.01	14.37	25.94	16.24	27.13	6.80	6.98	14.34	24.64

Note: Partial effects in brackets. * 10% significance, ** 5% significance, *** 1% significance.

Table 3: W2LT estimations with margin of victory computed from Mayor elections.

Variables	Full electorate		Male electorate		Female electorate	
	2006	2009	2006	2009	2006	2009
constant	3.2644***	1.6956	2.4694**	1.7407	2.9041**	2.0659**
lnwage	-0.2149**	-0.0897	-0.1549*	-0.0913	-0.1891**	-0.1203
	[-0.1936***]	[-0.0846]	[-0.1332*]	[-0.0840]	[-0.1676**]	[-0.1146]
margin	-0.1482*	-0.0173	-0.1866**	-0.0005	-0.1143	-0.0163
	[-0.1335*]	[-0.0163]	[-0.1605**]	[-0.0004]	[-0.1013]	[-0.0156]
particip	0.8414**	0.7586***	1.0863***	0.7021***	0.7304**	0.7105***
	[0.7580*]	[0.7159***]	[0.9343***]	[0.6456***]	[0.6474**]	[0.6771***]
ethnic	-0.9541**	-0.9831***	-1.0412**	-0.9074***	-0.7575	-1.0269***
	[-0.8595**]	[-0.9278***]	[-0.8955**]	[-0.8344***]	[-0.6715]	[-0.9786***]
indep	0.0072	-0.0595	0.0301	-0.0483	-0.0261	-0.0601
	[0.0065]	[-0.0575]	[0.0251]	[-0.0456]	[-0.0236]	[-0.0585]
rural	0.0407	0.0821*	0.0704	0.0896*	0.0316	0.0645
	[0.0352]	[0.0727*]	[0.0558]	[0.0758*]	[0.0272]	[0.0589]
No. of obs.	52	54	52	54	52	54
Left-censored obs.	0	0	0	0	0	0
Right-censored obs.	13	11	17	12	11	10
χ^2 statistic	36.56	30.86	37.27	28.15	27.10	32.97
Log likelihood	16.98	18.85	7.87	15.46	14.97	21.09

Note: Partial effects in brackets. * 10% significance, ** 5% significance, *** 1% significance.